1. ISBN: 16215-738-1-t; t=?

$$\sum_{i=1}^{10} (11-i)\cdot x_i \equiv 0 \pmod{11}$$

$$(10\cdot 1+9\cdot 6+8\cdot 2+7\cdot 1+6\cdot 5+5\cdot 7+4\cdot 3+3\cdot 8+2\cdot 1+t)\equiv 0 \pmod{11}$$

$$(10+54+16+7+30+35+12+24+2+t)\equiv 0 \pmod{11}$$

$$190\equiv 3 \pmod{11}$$

$$t\equiv t \pmod{11}$$

$$190+t\equiv 3+t \pmod{11}\equiv 0 \pmod{11}$$

$$\boxed{t=8}$$

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2. ISBN: 13516-945-2-t

$$(10\cdot 1+9\cdot 3+8\cdot 5+7\cdot 1+6\cdot 6+5\cdot 9+4\cdot 4+3\cdot 5+2\cdot 2+t)\equiv 0 \pmod{11}$$

$$(10+27+40+7+36+45+16+15+4+t)\equiv 0 \pmod{11}$$

$$200\equiv 2 \pmod{11}$$

$$t\equiv t \pmod{11}$$

$$200+t\equiv 2+t \pmod{11}$$

$$\boxed{t=9}$$

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3. ISBN: 04815-237-6-t

$$(10\cdot 0+9\cdot 4+8\cdot 8+7\cdot 1+6\cdot 5+5\cdot 2+4\cdot 3+3\cdot 7+2\cdot 6+1\cdot t)\equiv 0 \pmod{11}$$

$$(36+64+7+30+10+12+21+12+t)\equiv 0 \pmod{11}$$

$$192\equiv 5 \pmod{11}$$

$$t\equiv t \pmod{11}$$

$$192+t\equiv 5+t \pmod{11}$$

$$\boxed{t=6}$$

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4. ISBN: 953-2741-38-503-X

$r = 10 - (9+15+3+6+7+12+1+9+8+15+0+27) \equiv (\text{mod } 10)$

$r = 10-2 = 8 \Rightarrow \boxed{x=8}$

5. ISBN: 942-1673-03-202-X

$r = 10-(9+12+2+3+6+21+3+0+3+24+0+6) \equiv (\text{mod } 10)$

$r = 10-9 = 1 \Rightarrow \boxed{x=1}$

6. ISBN: 924-0156-87-364-X

$r = 10-(9+24+4+0+1+15+6+24+7+9+6+12) \equiv (\text{mod } 10)$

$r = 10-7 = 3 \Rightarrow \boxed{x=3}$

7. UPC: 0-34026-57064-X

$3\cdot(0+4+2+5+0+4)+(3+0+6+7+6+x) \equiv 0 \pmod{10}$

$3\cdot 15 + 22 \equiv 0 \pmod{10}$

$45+22+x \equiv 0 \pmod{10}$

$67 \equiv 7 \pmod{10}$

$x \equiv x \pmod{10}$

$67+x \equiv 7+x \pmod{10}$

$\boxed{x=3}$

8. UPC: 0-23719-20351-X

$$3 \cdot (0+3+1+2+3+1)+(2+7+9+0+5+X) \equiv 0 \pmod{10}$$

$$30+23+X \equiv 0 \pmod{10}$$

$$53 \equiv 3 \pmod{10}$$

$$X \equiv X \pmod{10}$$

$$53+X \equiv X+3 \pmod{10}$$

$$\boxed{X = 7}$$

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9. UPC: 0-50826-47961 + X

$$3\cdot(0+0+2+4+9+1)+(5+8+6+7+6+X)\equiv 0 \pmod{10}$$

$$48+32+X\equiv 0 \pmod{10}$$

$$80\equiv 0\pmod{10}$$

$$X\equiv X\pmod{10}$$

$$80+X\equiv 0+X\pmod{10}$$

$$\boxed{X=0}$$

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10. ISBN: 16873-859-4-1

$$(10\cdot 1+9\cdot 6+8\cdot 8+7\cdot 7+6\cdot 3+5\cdot 8+4\cdot 5+3\cdot 9+2\cdot 4+1)\equiv 0\pmod{11}$$

$$(10+54+64+49+18+40+20+27+8+1)\equiv 0\pmod{11}$$

$$291\equiv 5\pmod{11}$$

Nuk shërben si ISBN kod

11.

R: 11101011 01001011 00010110 11101001 11100101 10100111 10011 011

$$\Pi = \begin{array}{c} \left[\begin{array}{cccccccc} 1 & 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 1 & 0 & 0 & 1 & 1 & 0 & 1 & 1 \end{array}\right] \begin{array}{c} \checkmark \\ \checkmark \\ \times \\ \times \\ \times \\ \times \\ \times \end{array} \\ \begin{array}{cccccccc} \times & \checkmark & \checkmark & \checkmark & \checkmark & \times & \times & \checkmark \end{array} \end{array} \quad 7 \times 8 \quad \Rightarrow \quad \begin{array}{c} \left[\begin{array}{cccccccc} 1 & 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 & 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 1 & 0 & 0 & 1 \end{array}\right] \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \end{array} \\ \begin{array}{cccccccc} \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark \end{array} \end{array}$$

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12.

$$M = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}_{4\times 6}$$

$$C = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 1 & 1 \end{bmatrix}_{5\times 7}$$

13.

a) C' = {0010, 1001, 0111, 1100}

0010 + 0010 = 0000 ×
0010 + 1001 = 1011 ×
0010 + 0111 = 0101
0010 + 1100 = 1110

1001 + 1001 = 0000
1001 + 0111 = 1110
1001 + 1100 = 0101

0111 + 0111 = 0000
0111 + 1100 = 1011

1100 + 1100 = 0000

Nuk ponoget K.B.L

b) C = {0010, 1001, 0111, 1100}

0010 + 0010 = 0000
0010 + 1001 = 1011
0010 + 0111 = 0101
0010 + 1100 = 1110

1001 + 1001 = 0000
1001 + 0111 = 1110
1001 + 1100 = 0101

1100 + 1100 = 0000

0111 + 0111 = 0000
0111 + 1100 = 1011

Nuk ponoget K.B.L

14.

a) A[101] B[010] C[077]

$$\begin{cases} A + 0 + 0 = 0 \\ 0 + B + 7C = 0 \\ A + 7C = 0 \end{cases} = \begin{cases} A = 0 \\ B = 0 \\ C = 0 \end{cases}$$

- ~~Ponoget~~ Këta kode janë linearisht të pa varura.

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14.

b) A[1001], B[0111], C[0011], D[1001], E[1101]

$$\begin{cases} A+0+0+D+E=0 \\ 0+B+0+0+E=0 \\ 0+B+C+0+0=0 \\ A+B+C+D+E=0 \end{cases} \Rightarrow \begin{cases} A+D+E=0 \\ B+E=0 \\ B+C=0 \\ A+B+C+D+E=0 \end{cases}$$

- Këto kode janë linearisht të varura

15. C={0000, 1001, 1101, 1011, 1010, 0110, 1110, 0111}

$$G=\begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 \end{bmatrix}_{4\times 5}$$

A[10110], B[10110], C[01100], D[11101]

$$\begin{cases} A+B+0+D=0 \\ 0+0+C+D=0 \\ A+B+C+D=0 \\ A+B+0+0=0 \\ 0+0+0+D=0 \end{cases} \Rightarrow \begin{cases} A+B=0 \\ C=0 \\ A+B=0 \\ A+B=0 \\ D=0 \end{cases}$$

- Nuk vlen si matricë gjeneruese.

$$G=\begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 \end{bmatrix}_{4\times 5}$$ ← E re

A[10110], B[01110], C[01100], D[11101]

$$\begin{cases} A+0+0+D=0 \\ 0+B+C+D=0 \\ A+B+C+D=0 \\ A+B+0+0=0 \\ 0+0+0+D=0 \end{cases} \Rightarrow \begin{cases} A=0 \\ C=0 \\ B=0 \\ D=0 \end{cases}$$

- Vlen si Matricë gjeneruese

$[0000]\cdot G=[00000]$
$[1001]\cdot G=[01011]$
$[1101]\cdot G=[00101]$
$[1011]\cdot G=[00111]$
$[1010]\cdot G=[11010]$
$[0110]\cdot G=[00010]$
$[1110]\cdot G=[10100]$
$[0111]\cdot G=[11111]$

C^{t}_{5}={00000, 01011, 00101, 00111, 11010, 00010, 10100, 11111}

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16.

$$G = \begin{bmatrix} 1 & 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 1 \end{bmatrix}_{3\times 5}$$

---

a)

$$G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 \end{bmatrix}_{3\times 5} = [\underbrace{I}_{} \,|\, \underbrace{P}_{}]$$

---

b) $H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 \\ 1 & 1 & 1 & 0 & 1 \end{bmatrix}$, $H^T = \begin{bmatrix} 1 & 1 \\ 0 & 1 \\ 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$

C = {00000, 10011, 01001, 00111, 11010, 10100, 01110}

---

c)

00000 + C ⇒ 00000, 10011, 01001, 00111, 11010, 10100, 01110

10000 + C ⇒ 10000, 00011, 11001, 10111, 01010, 00100, 11110

01000 + C ⇒ 01000, 11011, 00001, 01111, 10010, 11100, 00110

00100 + C ⇒ 00100, 10111, 01101, 00011, 11110, 10000, 01010

00010 + C ⇒ 00010, 10001, 01010, 00101, 11000, 10110, 01100

---

d)

$[00000] \cdot H^T = [0\ 0]$

$[10000] \cdot H^T = [1\ 1]$

$[01000] \cdot H^T = [0\ 1]$

$[00100] \cdot H^T = [1\ 1]$

$[00010] \cdot H^T = [1\ 0]$

$r = [11010]$

$r \cdot H^T = [00]$

$c = [11010] - [00000] = [11010]$

$r = [11111]$

$r \cdot H^T = [1\ 0]$

$c = [11111] - [00010] = [11101]$

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16.

e)

$$G=\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 \end{bmatrix}_{5\times 6}$$

$[00000]\cdot G=[000000]$

$[10011]\cdot G=[100111]$

$[01001]\cdot G=[010010]$

$[00111]\cdot G=[001111]$

$[11010]\cdot G=[110101]$

$[10100]\cdot G=[101000]$

$[01110]\cdot G=[011101]$

$$C=\{0,\ 1+X^4+X^5+X^6,\ X+X^4,\ X^2+X^3+X^4+X^5,\ 1+X+X^3+X^5,\ 1+X^2,\ X+X^2+X^3+X^5\}$$

17. $G = \left[\begin{array}{cc|c} 1 & 1 & 0 \\ 0 & 0 & 1 \end{array}\right]$

a) $G = \left[\begin{array}{cc|c} 1 & 0 & 1 \\ 0 & 1 & 0 \end{array}\right]$ $H^T = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$

b) $H = [1\ 0\ 1]$, $G = \{000, 101, 010, 111\}$

c) 000 ⇒ 000, 101, 010, 111 [0]

100 ⇒ 100, 001, 110, 011 [1]

010 ⇒ 010, 111, 000, 101

d) ~~Teorie~~

$[0\,0\,0] \cdot H^T = [0]$

$[1\,0\,0] \cdot H^T = [1]$

$\boxed{\begin{array}{l} r = 111 \cdot H^T = [0] \\ ~~r~~ [111] - [000] = [111] \end{array}}$

$\boxed{\begin{array}{l} r = 110 \cdot H^T = [1] \\ [110] - [100] = [010] \end{array}}$

e) $G = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}_{3 \times 4}$

$[0\,0\,0] \cdot G = [0\,0\,0\,0]$ $[1\,1\,1] \cdot G = [1\,1\,1\,0]$

$[1\,0\,1] \cdot G = [1\,0\,1\,0]$

$[0\,1\,0] \cdot G = [0\,1\,0\,0]$

$G = \{0, 1+x^2, x, 1+x+x^2\}$

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18. $r=3$, $n=7$, $k=4$

a) $m=[1010]$

1	0	1	0	0	1	0
D_7	D_6	D_5	r_4	D_3	r_2	r_1

$r_1 D_3 D_5 D_7 \Rightarrow 0$

$r_2 D_3 D_6 D_7 \Rightarrow 1$

$r_4 D_5 D_6 D_7 \Rightarrow 0$

$m=[1010] \Rightarrow C=[1010010]$

b) $m=[1011]$

1	0	1	0	1	0	1
D_7	D_6	D_5	r_4	D_3	r_2	r_1

$r_1 D_3 D_5 D_7 \Rightarrow 1$

$r_2 D_3 D_6 D_7 \Rightarrow 0$

$r_4 D_5 D_6 D_7 \Rightarrow 0$

$m[1011] \Rightarrow C[1010101]$

19.

a) $\Pi = [1011001]$

$$\begin{array}{ccccccc} 1 & 0 & 1 & 1 & 0 & 0 & 1 \\ D_7 & D_6 & D_5 & \Pi_4 & D_3 & \Pi_2 & \Pi_1 \end{array}$$

$\Pi_1 D_3 D_5 D_7 = 1011$ - Gabim

$\Pi_2 D_3 D_6 D_7 = 0001$ - Gabim

$\Pi_4 D_5 D_6 D_7 = 1101$ - Gabim

D_7 - Gabim $\Rightarrow [0011001]$

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b) $\Pi = [1100011]$

$\Pi_1 D_3 D_5 D_7 = 1001$ - Mirë

$\Pi_2 D_3 D_6 D_7 = 1011$ - Gabim

D_6 - Gabim $\Rightarrow [1000011]$

20. $m = [0111]$, $g(x) = x^3 + x + 1$

I $m \Rightarrow x + x^2 + x^3$

II $(x + x^2 + x^3) \cdot x^3 = x^4 + x^5 + x^6$

III $\cancel{x^6} + x^5 + \cancel{x^4} : x^3 + x + 1 = x^3 \, x^2$

$\cancel{x^6} + \cancel{x^4} + x^3$

$\cancel{x^5} + \cancel{x^3}$

$\cancel{x^5} + \cancel{x^3} + x^2$

$x^2 = p(x)$

$x^2 + x^4 + x^5 + x^6 \Rightarrow [0010111]$

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21. $m = [1001]$, $g(x) = x^4 + x^2 + x + 1$, $k = 4$, $c = 7$, $n = 7 - 4 = 3$

Sˆg(x) > n – Nuk vlen si p. gjenerues!

mosim: $g(x) = x^3 + x^2 + x + 1$

I) $m \Rightarrow 1 + x^4$

II) $(1 + x^3) \cdot x^3 = x^3 + x^6$

III) $\cancel{x^6} + \cancel{x^3} : x^3 + x^2 + x^1 + 1 = x^3\ x^2\ 1$

$$\begin{array}{l} \cancel{x^6} + x^5 + x^4 + \cancel{x^3} \\ \hline \cancel{x^5} + \cancel{x^4} \\ \cancel{x^5} + \cancel{x^4} + x^3 + x^2 \\ \hline \cancel{x^3} + \cancel{x^2} \\ \cancel{x^3} + \cancel{x^2} + x + 1 \\ \hline x + 1 = p(x) \end{array}$$

$1 + x + x^3 + x^6 \Rightarrow [1101001]$

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22. $n = [1100110]$, $g(x) = x^3 + x + 1$

I) $n \Rightarrow 1 + x + x^4 + x^5$

II) $\cancel{x^5} + x^4 + x + 1 : x^3 + x + 1 = x^2\ x\ 1$

$$\begin{array}{l} \cancel{x^5} + x^3 + x^2 \\ \hline \cancel{x^4} + x^3 + \cancel{x^2} + \cancel{x} + 1 \\ \cancel{x^4} + \cancel{x^2} + \cancel{x} \\ \hline \cancel{x^3} + \cancel{1} \\ \cancel{x^3} + x + \cancel{1} \\ \hline x = p(x) \end{array}$$

– ka gabim

$s(x) = [0100000]$

$n - s = [1000110]$

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23. $n = [1\,1\,1\,0\,0\,1\,1]$, $g(x) = x^3 + x^2 + x + 1$

I) $n \Rightarrow 1 + x + x^2 + x^5 + x^6$

II) $\cancel{x^6} + \cancel{x^5} + x^2 + x + 1 : x^3 + x^2 + x + 1 = x^3\,x$

$\cancel{x^6} + \cancel{x^5} + x^4 + x^3$

$\cancel{x^4} + \cancel{x^3} + \cancel{x^2} + \cancel{x} + 1$

$\cancel{x^4} + \cancel{x^3} + \cancel{x^2} + \cancel{x}$

1 – ka qalıım

III

$s(x) = [1\,0\,0\,0\,0\,0\,0]$

$n - s = [0\,1\,1\,0\,0\,1\,1]$

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24.

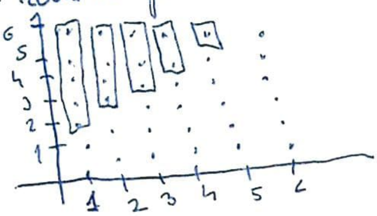
a) Në të dy zaret bie numri 3

$P(a) = \frac{1}{36}$

b) Në të dy zaret bie numër i njëjtë

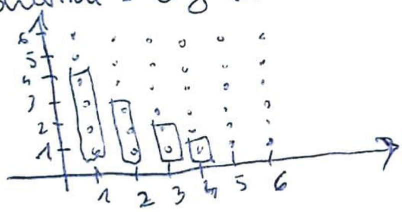
$P(b) = \frac{6}{36}$

c) Në zarin e parë bie numër më i madh se në zarin e dytë



$P(c) = \frac{5}{36} + \frac{4}{36} + \frac{3}{36} + \frac{2}{36} + \frac{1}{36} = \frac{15}{36}$

d) Shuma e dy zareve është më i vogël se 6



$P(d) = \frac{4}{36} + \frac{3}{36} + \frac{2}{36} + \frac{1}{36} = \frac{10}{36}$

e) Prodhimi i pikëve në të dy zaret është numër çift

$P(e) = \frac{3}{36} + \frac{6}{36} + \frac{3}{36} + \frac{6}{36} + \frac{3}{36} + \frac{6}{36} = \frac{27}{36}$

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25. L: 52

a) të jet figurë: J, Q, K, figura - 3, më 52-letra ka nga 4 kopje, $4 \cdot 3 = 12$ - fig

$$P(F) = \frac{12}{52} = 0{,}230$$

b) Të jet kator ose zemër: kemi 4 - lloje figurash, të cilat përsëriten 13 herë në 52 letra pra:

$$P(K+Z) = P(K) + P(Z) = \frac{13}{52} + \frac{13}{52} = \frac{26}{52} = 0{,}5$$

c) $P(\bar{F}) = 1 - \frac{12}{52} = 1 - 0{,}230 = 0{,}77$

26. Topa – 45 , Kuq – 10 , Zi – 15 , Gjelbër – 10 , Verdhë – 10

a) $P(Z) = \frac{15}{45}$

b) $P(K+Z) = P(K) + P(Z) = \frac{10}{45} + \frac{15}{45} = \frac{25}{45}$

c) $P(\overline{V}) = P(K+Z+G) = \frac{10}{45} + \frac{15}{45} + \frac{10}{45} = \frac{35}{45}$

d) $P(K+Z+G) = \frac{35}{45}$, e njëjtë si c)

e) $P(\overline{Kalter}) = 1$

---

27. Të rinjë – 20 , Vajza – 7 , Djemë – 13 , Me syze – 6

$P(S+V) = P(S) + P(V) - P(V \cap S) = \frac{6}{20} + \frac{7}{20} - \frac{4}{20} = \frac{9}{20}$

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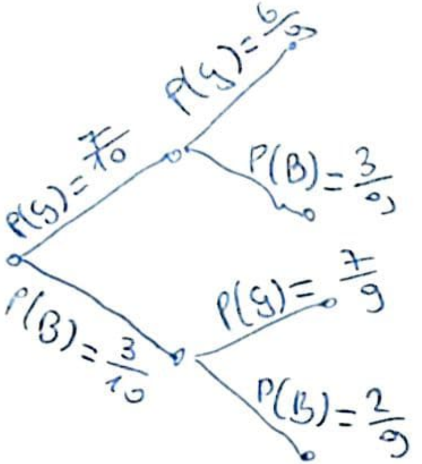
28. 10 - Topa, 7 - Gjelbërt, 3 - Bardhë



a) $P(G) = \frac{7}{10}$

b) $P(G_1 B_2) = P(G_1) \cdot P(B_2) = \frac{7}{10} \cdot \frac{3}{9} = \frac{21}{90} = \frac{7}{90}$

c) $P(G \cdot B) = P(G_1 \cdot B_2) + P(B_1 G_2) = \left(\frac{7}{10} \cdot \frac{3}{9}\right) + \left(\frac{3}{10} \cdot \frac{7}{9}\right) = \frac{21}{90} + \frac{21}{90} = \frac{42}{90}$

$\boxed{\frac{42}{90}}$

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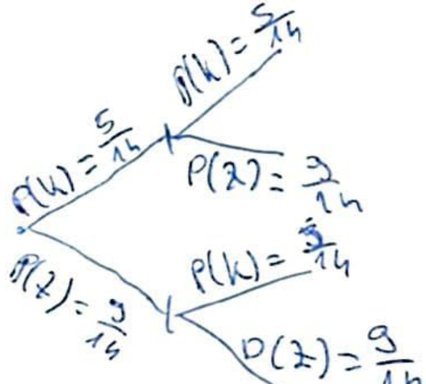
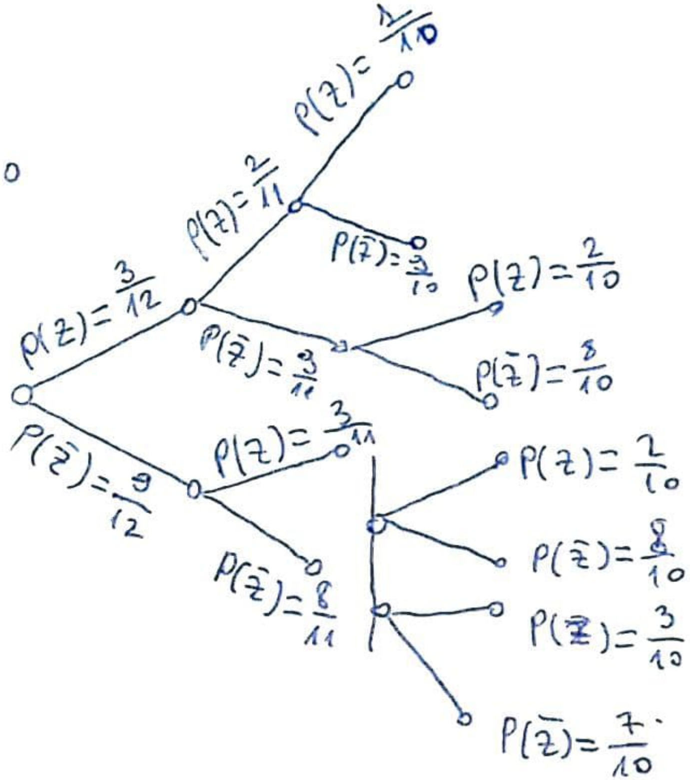
29. Topa - 14, kuq - 5, zi - 9



$P(K_1 Z_2) = \frac{5}{14} \cdot \frac{9}{14} = \frac{45}{196} = 0,22$

30.

4K	3Z	5B



$$X = \begin{bmatrix} 0 & 1 & 2 & 3 \\ 0.382 & 0.491 & 0.123 & 0.005 \end{bmatrix} = 1$$

$$P(X=0) = \frac{9}{12} \cdot \frac{8}{11} \cdot \frac{7}{10} = \frac{504}{1320} = 0.382$$

$$P(X=1) = \frac{3}{12} \cdot \frac{9}{11} \cdot \frac{8}{10} + \frac{9}{12} \cdot \frac{3}{11} \cdot \frac{8}{10} + \frac{9}{12} \cdot \frac{8}{11} \cdot \frac{3}{10} = 3 \cdot \frac{216}{1320} = \frac{648}{1320} = 0.491$$

$$P(X=2) = \frac{3}{12} \cdot \frac{2}{11} \cdot \frac{9}{10} + \frac{3}{12} \cdot \frac{9}{11} \cdot \frac{2}{10} + \frac{9}{12} \cdot \frac{3}{11} \cdot \frac{2}{10} = 3 \cdot \frac{54}{1320} = \frac{162}{1320} = 0.123$$

$$P(X=3) = \frac{3}{12} \cdot \frac{2}{11} \cdot \frac{1}{10} = \frac{6}{1320} = 0.005$$

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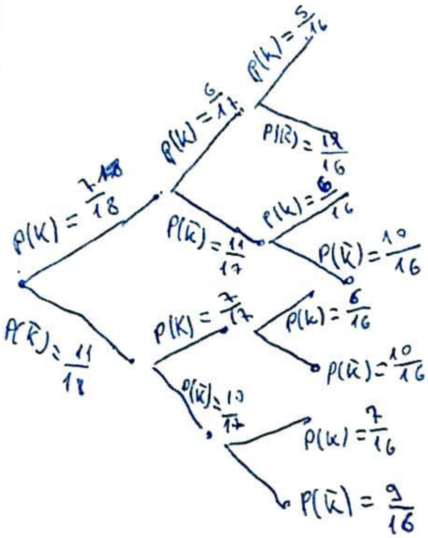
31. Τομα - 18 , K - 7 , $\bar{K}$ - 11



$$X = \begin{bmatrix} 0 & 1 & 2 & 3 \\ 0{,}202 & 0{,}472 & 0{,}283 & 0{,}043 \end{bmatrix} = 1$$

$$P(k=0) = P(\bar{k}\bar{k}\bar{k}) = \frac{11}{18}\cdot\frac{10}{17}\cdot\frac{9}{16} = 0{,}202$$

$$P(k=1) = P(k\bar{k}\bar{k}) + P(\bar{k}k\bar{k}) + P(\bar{k}\bar{k}k) =$$

$$= \left(\frac{7}{18}\cdot\frac{11}{17}\cdot\frac{10}{16}\right) + \left(\frac{11}{18}\cdot\frac{7}{17}\cdot\frac{10}{16}\right) + \left(\frac{11}{18}\cdot\frac{10}{17}\cdot\frac{7}{16}\right) = (0{,}157)\cdot 3 = 0{,}472$$

$$P(k=2) = P(kk\bar{k}) + P(k\bar{k}k) + P(\bar{k}kk) =$$

$$= \left(\frac{7}{18}\cdot\frac{6}{17}\cdot\frac{11}{16}\right) + \left(\frac{7}{18}\cdot\frac{11}{17}\cdot\frac{6}{16}\right) + \left(\frac{11}{18}\cdot\frac{7}{17}\cdot\frac{6}{16}\right) =$$

$$= (0{,}094)\cdot 3 = 0{,}283$$

$$P(k=3) = P(kkk) = \frac{7}{18}\cdot\frac{6}{17}\cdot\frac{5}{16} = 0{,}043$$

$$E(x) = 0 + 0{,}472 + 0{,}566 + 0{,}129 = \underline{1.167}$$

$$D(x) = E(x^2) - [E(x)]^2 = 1{,}991 - 1{,}362 = \underline{0{,}629}$$

$$E(x^2) = 0 + 0{,}472 + 1{,}132 + 0{,}387 = 1{,}991$$

32.

$$X=\begin{bmatrix} 2 & -1 & 0 \\ \frac{2}{5} & \frac{2}{5} & \frac{1}{5} \end{bmatrix} \qquad y=\begin{bmatrix} 1 & 3 & -2 \\ \frac{1}{4} & \frac{2}{4} & \frac{1}{4} \end{bmatrix}$$

$$Z=Z(x,y)=2X-y$$

$$Z\in\{3,1,6,-3,-5,0,-1,-3,2\}\Rightarrow\{-5,-3,-1,0,1,2,3,6\}$$

$$2\begin{cases} =4-1=3 \\ =4-3=1 \\ =4+2=6 \end{cases}$$

$$-1\begin{cases} =-2-1=-3 \\ =-2-3=-5 \\ =-2+2=0 \end{cases}$$

$$0\begin{cases} =0+1=-1 \\ =0-3=-3 \\ =0+2=2 \end{cases}$$

$$Z=\begin{bmatrix} -5 & -3 & -1 & 0 & 1 & 2 & 3 & 6 \\ \frac{1}{5} & \frac{2}{10} & \frac{1}{20} & \frac{1}{10} & \frac{1}{5} & \frac{1}{20} & \frac{1}{10} & \frac{1}{10} \end{bmatrix}=1$$

$$P(-5)=\frac{2}{5}\cdot\frac{2}{4}=\frac{1}{5}$$

$$P(-3)=\left(\frac{2}{5}\cdot\frac{1}{4}\right)+\left(\frac{1}{5}\cdot\frac{2}{4}\right)=\frac{1}{10}+\frac{1}{10}=\frac{2}{10}$$

$$P(-1)=\frac{1}{5}\cdot\frac{1}{4}=\frac{1}{20}$$

$$P(0)=\frac{2}{5}\cdot\frac{1}{4}=\frac{1}{10}$$

$$P(1)=\frac{2}{5}\cdot\frac{2}{4}=\frac{2}{10}=\frac{1}{5}$$

$$P(2)=\frac{1}{5}\cdot\frac{1}{4}=\frac{1}{20}$$

$$P(3)=\frac{2}{5}\cdot\frac{1}{4}=\frac{1}{10}$$

$$P(6)=\frac{2}{5}\cdot\frac{1}{4}=\frac{1}{10}$$

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33.

$$X = \begin{bmatrix} 9 & 8 & 10 \\ 0{,}2 & 0{,}6 & 0{,}2 \end{bmatrix} \qquad Y = \begin{bmatrix} 10 & 8 & 9 \\ 0{,}1 & 0{,}2 & 0{,}7 \end{bmatrix} \Rightarrow \begin{bmatrix} 8 & 9 & 10 \\ 0{,}2 & 0{,}7 & 0{,}1 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} 8 & 9 & 10 \\ 0{,}6 & 0{,}2 & 0{,}2 \end{bmatrix}$$

$$E(X) = 9\cdot 0{,}2 + 8\cdot 0{,}6 + 10\cdot 0{,}2 = 1{,}8 + 4{,}8 + 2 = 8{,}6$$

$$E(Y) = 8\cdot 0{,}2 + 9\cdot 0{,}7 + 10\cdot 0{,}1 = 1{,}6 + 6{,}3 + 1 = 8{,}9$$

$E(X) < E(Y)$ – Y është gjuajtës mè i mirë.

34. $p=0.6,\ q=0.4,\ n=6$

a) $P(x=3) = C_6^3 \cdot (0.6)^3 \cdot (0.4)^3 = \frac{6\cdot5\cdot4\cdot\cancel{3!}}{3!\,\cancel{3!}} \cdot 0.216 \cdot 0.064 = 20 \cdot 0{,}216 \cdot 0{,}064 = \underline{0.2765}$

b) $P(x>3) = P(x=4)+P(x=5)+P(x=6) = 0.312 + 0.192 + 0.05 = \boxed{0.554}$

$P(x=4) = C_6^4 (0.6)^4 \cdot (0.4)^2 = \frac{6\cdot5\cdot\cancel{4!}}{\cancel{4!}\,2!} \cdot (0.13) \cdot (0.16) = \frac{30}{2} \cdot 0{,}13 \cdot 0{,}16 = \underline{0{,}312}$

$P(x=5) = C_6^5 (0.6)^5 \cdot (0.4)^1 = \frac{6\cdot\cancel{5!}}{\cancel{5!}\,1!} \cdot 0.08 \cdot 0.4 = 6 \cdot 0{,}08 \cdot 0{,}4 = \underline{0.192}$

$P(x=6) = C_6^6 (0.6)^6 \cdot (0.4)^0 = (0{,}6)^6 = 0.05$

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35. A – Dy topa të kuq

k1

8B	4Z	6K

k2

3B	5Z	2K

— H_1 – Kuq-Kuq.

$$P(H_1) = \frac{C_6^2}{C_{18}^2} = \frac{15}{153}, \quad P_{H_1}(A) = \frac{4}{12}$$

— H_2 – kuq – Zi.

$$P(H_2) = \frac{C_6^1 \, C_4^1}{153} = \frac{6 \cdot 4}{153} = \frac{24}{153}, \quad P_{H_2}(A) = \frac{3}{12}$$

— H_3 – Kuq – Bardh.

$$P(H_3) = \frac{C_6^1 \cdot C_8^1}{153} = \frac{6 \cdot 8}{153} = \frac{48}{153}, \quad P_{H_3}(A) = \frac{3}{12}$$

— H_4 – Bardh – Bardh.

$$P(H_4) = \frac{C_8^2}{153} = \frac{28}{153}, \quad P_{H_4}(A) = \frac{2}{12}$$

— H_5 – Bardh – Zi.

$$P(H_5) = \frac{C_8^1 \, C_4^1}{153} = \frac{8 \cdot 4}{153} = \frac{32}{153}, \quad P_{H_5}(A) = \frac{2}{12}$$

— H_6 – Zi – Zi.

$$P(H_6) = \frac{C_4^2}{153} = \frac{6}{153}, \quad P_{H_6}(A) = \frac{2}{12}$$

$$P(A) = \sum_{k=1}^{n} P(H_k) \cdot P(A \mid H_k) = \left(\frac{15}{153} \cdot \frac{4}{12}\right) + \left(\frac{24}{153} \cdot \frac{3}{12}\right) + \left(\frac{48}{153} \cdot \frac{3}{12}\right) + \left(\frac{28}{153} \cdot \frac{2}{12}\right) + \left(\frac{32}{153} \cdot \frac{2}{12}\right) + \left(\frac{6}{153} \cdot \frac{2}{12}\right) = \frac{60}{1836} + \frac{72}{1836} + \frac{144}{1836} + \frac{56}{1836} + \frac{64}{1836} + \frac{12}{1836}$$

$$= \frac{408}{1836} = 0{,}222$$

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